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OFF-SITE MOVEMENT OF PICLORAM FROM A COASTAL PLAIN KUDZU SITE.

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ABSTRACT

Picloram (4-amino-3,5,6-trichloro-picolinic acid) was aerially applied to a longleaf pine (Pinus palustris L.) site in the upper coastal plain of Alabama to control kudzu (Pueraria lobata (Willd.) Ohwi). Granules (10% ai [active ingredient]) were spread at a rate of 56 kg/ha to sandy loam Typic Paleudult soils. Movement was monitored with mineral soil samples, tension-cup lysimeters, flow-proportional streamflow samplers, and discrete samplers. Picloram levels in the upper 15 cm of mineral soil peaked at 2,250 to 959 µg/kg 25 days after the application, depending on slope position, and declined to the 289 to 126 µg/kg range 1 year later. In soil solution picloram appeared at a depth of 0.4 m between 26 and 273 days after application. Only 25% of the lysimeters consistently contained detectable residues. Maximum picloram levels in soil solution were 130, 450, and 191 µg/L for ridge, mid, and toe slope positions, respectively. Four days after the herbicide application, 68 µg/L picloram was detected in streamflow below the treated area. A maximum of 77 µg/L occurred 18 days after the application and immediately after a storm of 25 mm. Downstream levels dropped to < 10 µg/L after 90 days and < 2 µg/L after 200 days but climbed again into the 20-30 µg/L range 475 days later. Most of the initial off-site movement came from a perennial stream in the treated area. Picloram levels in this stream were similar to those observed downstream but occurred earlier, were higher (up to 241 µg/L), and dropped below 2 µg/L faster (after day 150).